



Glendale Unified School District



Solar project FAQs *

Solar projects were included in the modernization and technological upgrade goals of Measure S, approved by Glendale and La Crescenta voters in April 2011.

Where will solar projects be placed?

The Summer 2012 solar projects are being placed at Clark Magnet High School, Crescenta Valley High School, Rosemont Middle School, Columbus Elementary, Keppel Elementary, Monte Vista Elementary and Mountain Avenue Elementary.

The initial sites were chosen for their energy-generating potential and exposure to sunshine. Several sites in La Crescenta (CVHS, Rosemont, Monte Vista and Mountain Avenue), which are served by the Southern California Edison (SCE) utility, received priority to take advantage of California Solar Initiative rebates and incentives offered through SCE, while they last. The California Solar Initiative credits will save the District an estimated additional \$900,000, above other energy savings, over the next five years.

What are solar panels made of?

The panels are manufactured by Yingli Solar, one of the largest global suppliers of photovoltaic panels. PV modules are crystalline silica – derived from sand or quartz – that is refined into metallurgical grade silicon, then sliced into very thin wafers, which become the main component of photovoltaic panels.

Are solar cells safe?

Yes. While no one can claim there is no danger, there is no scientific evidence to suggest or conclude that solar panels pose any elevated risk to human health or safety. Silica solar cells pose minimal risks to human health or the environment according to reviews conducted by the U.S. Department of Energy Brookhaven National Laboratory and the Electric Power Research Institute.

What about glare?

Solar panels are designed to absorb light and heat, not reflect it. The Federal Aviation Administration (FAA) even allows solar arrays near airports because reflected glare is not a significant concern. FAA studies concluded solar panels with anti-reflective coatings reflect only about 2% of incoming light. Solar panel glass is formulated to reduce reflection and facilitate maximum absorption of solar energy.

What about radiated heat?

Solar arrays collect no more heat than any other structure standing in the sun. There is no net heat generated by solar panels. There is no data to substantiate any claim to change in ambient temperature.

What about electromagnetic fields or photovoltaic radiation?

Electromagnetic Field or EMF radiation is primarily associated with high voltage transmission lines, which carry more than 1500 times the electrical energy of a low voltage solar array. Furthermore, solar panels produce direct current (DC) electricity; the magnetic fields that have received attention in the public health field are those produced by alternating current (AC), which is how electricity is typically transmitted in overhead lines and in common household electrical devices. DC electricity simply doesn't create alternating magnetic fields and the non-alternating magnetic fields they do produce are infinitely small compared even with the earth's own magnetic field.

What electromagnetic fields may be present in photovoltaic systems do not approach levels considered harmful to human health established by the International Commission on Non-Ionizing Radiation Protection. The small electromagnetic fields produced by photovoltaic systems drop off considerably with distance and would be indistinguishable from normal background levels within several yards. According to the U.S. Department of Energy National Renewable Energy Laboratory, solar panels produce weaker EMF than household appliances, considerably less than half that of a refrigerator.

Is there a danger when a panel breaks?

There is no significant danger of breakage. The panels are covered with highly durable tempered glass. In the event a panel breaks workers responding to the break would exercise normal care when working around broken glass or electrical components.

Is there danger of fire or harmful fumes?

There is very minimal danger of fire in solar panels, which are made of metal and glass. Solar panels are sealed units. According to the Electric Power Research Institute, it is theoretically possible for hazardous fumes to be released in case of fire, and inhalation of these fumes could pose a risk to human health, but researchers do not generally believe these risks to be substantial given the short-duration of fires and the relatively high melting point of the materials present in the solar modules.

Do solar panels generate noise?

No. Solar panels are completely quiet. The only sound in a solar installation is the junction box, located away from the panels themselves, where the collected DC energy is converted into usable AC electricity.

How tall are the solar panels?

Each project varies. None of the GUSD solar projects reaches a height higher than a maximum 16 feet.

Why weren't the solar panels installed on the roofs of school buildings?

GUSD school buildings, most of which were built in the 1960s or earlier, are not designed to bear the weight of a solar array on the roof. Significant and costly modifications would be needed, which would defeat the money-saving purpose of the solar project. All project solar arrays are free-standing structures.

What is the product manufacturer and name of the panels to be used here?

Yingli #YL240P-29b (Rosemont, Mountain, Monte Vista, Keppel, Columbus)

Yingli # YL260C-30b (Crescenta Valley, Clark Magnet)

What is the type of conductor in the units (silicon, etc)?

Yingli Solar produces both mono and polycrystalline solar modules. Copper conductors are used to connect these cells together. All solar modules are sealed (laminated) in order to avoid damaging the modules, which would reduce its performance.

Does the manufacturer recommend at 10% angle? Why do we then have 5% angle?

The manufacturer does not recommend any particular angle. The "optimal" tilt varies by latitude and typically can be as high as 45 degrees depending on where you are on earth and what time of day or year it is. The 10-degree maximum shown on the structural drawings was what the maximum angle the structure can accommodate. The reason a 5-degree angle was chosen is due in part to the post height restriction. If the panels were mounted at a 10-degree slope, the clear height from the ground will be reduced. Note the structural plans indicate that the post height cannot be higher than a certain height (10'-6" or 12'-0" depending on the structure location) which would mean the leading edge of the arrays may potentially be less than 9'-0" if the ground is uneven below the array. A 5-degree pitch will allow for both good production as well as buffer room to adjust the post height to conform with field conditions.

Is the impact of a fallen tree branch (how big?) enough to break one of the panels?

This is difficult to quantify in branch proportions. How high will the branch be falling from and/or at what speed? The panels are not designed to hold up from impacts of large dynamic objects. The only dynamic object it is rated to withstand is hailstones up to 1 in. flying at 51 mph (25mm at 23 m/s). Otherwise, it is capable of withstanding up to 113psf of static load from the front and 50psf static load from the back of the module. Any additional specifications will need to come from Yingli.

What type and color is the glass in the panels?

The glass used has no color and is transparent since using any color in the glass will reduce the module's efficiency.

How far away are the inverter units from the collection units (and how far from nearest residences)?

This varies from site to site based on the topography of the site and the locations where we can place the arrays without getting in the way of obstructions or obstruction paths of travel or rights of way. The furthest inverter location from the solar modules is located on Clark Magnet where the south lot modules are approximately 1000 ft. from the inverter. The nearest arrays to neighboring residences are located at Monte Vista where the modules are approximately 20 feet from the neighbor's backyard.

Will any part of the structure rust?

Structure should not rust as long as the galvanized coating on the steel members remain undamaged.

- *This Solar Project FAQ is a document that will continue to be updated. 8/14/2012*